Co-payments, gatekeeping, and the utilization of outpatient public and private care at age 50 and above in Europe

Copayments, gatekeeping, and the utilization of outpatient public and private care at age 50 and above in Europe

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June 21, 2013

Abstract

I analyze the relationship between health care institutions and the utilization of outpatient services by individuals aged 50 and above. I use cross-sectional micro data from thirteen European countries. I focus on the out-of-pocket costs of health care utilization, the gatekeeper role of general practitioners, and how these institutional settings are related to public and private care utilization. I find that copayments are related negatively to the probability of visiting a general practitioner among those in good health condition. I estimate the utilization of private specialist care to be higher in countries where copayments are required for public specialist care, and where the general practitioners have gatekeeper role. These estimated associations with private specialist care utilization are relatively large in magnitude, and are driven by individuals in the top income quartile.

JEL codes: I11, I18
Classifications: health economics, health policy and administration
Keywords: outpatient care, private care, health care institutions, SHARE data

1 Introduction

In this paper I provide quantitative results on how the utilization of outpatient care among people aged 50 and above in Europe is related to the out-of-pocket costs of health care services and to the gatekeeper role of general practitioners. As an empirical novelty, I also analyze the utilization of private care in relation to the health care institutions. If the use of health services increases with public financing then that might indicate over-utilization, i.e. utilization above the socially optimal level. However, decreasing out-of-pocket costs might improve the overall health level of the population through making preventive and curative health services available. The use of private care is also of policy interest: it can decrease the burden on the public budget and public health care facilities, but might violate the equal accessibility of health services.

The basic difficulty in the empirical analysis is that the prices of health services realized by the patients are not observed. In order to analyze the relation between out-of-pocket costs and utilization I use the indicators of cost-sharing arrangements as indirect measures of out-of-pocket costs. I base the empirical analysis on household-level data, which has the advantage that a wide range of individual characteristics can be controlled for which are likely to influence the demand for health services. The data used are from the

*An earlier version of this paper was written during my PhD studies at Central European University, Budapest, and consists a chapter of my PhD thesis.

second wave of the Survey of Health, Ageing, and Retirement in Europe (SHARE). I analyze the utilization of two types of outpatient health services: health care provided by general practitioners and by specialists.

The main novelty of the paper is estimating how some selected characteristics of the public health care system are related to the utilization of private outpatient care. This analysis is possible since as a unique feature of SHARE, information on private care utilization is included in the data. Two basic mechanisms can influence the demand for private care. First, the disutility of private care utilization can be lower than that of public care, due to shorter waiting times or higher quality of services. Second, the costs of private care services are typically higher. On the other hand, the demand for public outpatient care is influenced among others by the out-of-pocket costs of services, the availability and quality of care.

The main results indicate the expected associations between the analyzed financing and organizational indicators, and public and private care utilization. There is also some evidence that cost-sharing implies higher utilization of public specialist care, which can be due to the higher quality of services or to reverse causality. The estimation results indicate that if someone does not have any chronic health problem in the analyzed 50+ population then the likelihood of visiting a public general practitioner (GP) is 13 percentage points lower if copayments are required, 11 percentage points lower if GPs have gatekeeper role. The estimated probability of visiting a private specialist is 4 percentage points higher if GPs act as gatekeepers, and 3 percentage points higher if there are copayments for specialist care. These results are driven by people in the top income quartile.

The rest of the paper is structured as follows. In section 2 I summarize the main results of the related empirical literature. In section 3 I present the basic characteristics of the health care systems in the analyzed countries. The data used in the empirical analysis are described in section 4. The empirical specification and the results of the regression models are discussed in section 5. Section 6 concludes.

2 Related literature

There are few empirical results on the relationship between public health expenditures and health care demand in Europe. As for the U.S., the general finding is that health insurance coverage and higher coinsurance rate increase the demand for health services, due to the reduced costs of utilization. Such result is found among others by [1], based on the RAND Health Insurance Experiment.

One strand of the related literature uses aggregate data to analyze the determinants of health care utilization and aggregate health expenditures. As summarized by [2], there is consensus in the literature that aggregate income is a crucial factor in explaining health expenditure differences across the countries, and it has positive effect. This relationship is found e.g. by [3] based on a sample of 20 OECD countries over years $1960-87$, who at the same time do not find any significant effect of public financing on per capita health expenditures. In contrast, [4] estimate a significantly negative effect of public financing on health expenditures, but they also find a positive effect of per capita GDP.

More information can be gained about the influencing factors of health care utilization if individual data are used. The horizontal equity in utilizing inpatient and outpatient care services in 11 developed countries is analyzed by [5]. Their main finding is that there are only small inequities in the health care distribution. [5] relate the cross-country differences in equity to some country-specific health care characteristics as cost-sharing and gatekeeping arrangements. However, due to the complexity of the health care systems no clear patterns could be found. [6] use the European Community Household Panel (ECHP) to analyze the determinants of outpatient care utilization in Europe, with a focus on the effects of income and education.

They report cross-country differences, and find that richer and more educated individuals utilize specialist care generally to a higher extent. They relate these findings to some institutional characteristics: copayments required and the relative importance of the private sector can contribute to socioeconomic inequities.

In a recent paper [7] compare the importance of individual and institutional factors in outpatient care utilization in Europe using the SHARE data, and find greater role of individual factors. According to their results, institutional factors like physician density, copayment and gatekeeping have a greater role in determining visits to specialists than to general practitioners. [8] also provide an international analysis of the determinants of outpatient care utilization based on the ECHP data. They estimate the organizational variables to have basically the expected effects, but they also find that fee-for-service payment schemes increase the frequency of visits to specialists. The authors conclude that this finding can indicate demand induced by the physicians.

My research differs from these papers not only in the applied sample and empirical methods, but also in the research question. The aim here is to analyze the association between various characteristics of the health care institutions and outpatient care utilization, and also to analyze if these institutional characteristics are related the use of private health services. The main focus is on the relation between cost-sharing indicators, the gatekeeper role of GPs, and outpatient care use.

Little is known about the determinants of private care utilization. A reason for the limited information is the lack of a clear definition for private services. As [9] points out, private practitioners are always embedded in the public regulations. Moreover, services financed from private sources are not necessarily provided by private agents.

Related to private health care, [10] analyzes the choice between private and public health care based on U.K. data. Her main finding is that individuals who utilize private services are generally better-off and also more likely to have utilized private care in the past than those who do not utilize private services. However, in the longitudinal dimension Propper also finds considerable movements of patients between the public and private sectors. Since my empirical analysis is based on a cross-sectional sample, I analyze only the influencing factors of private care utilization, but not how persistent this utilization is over time. I make use of the cross-country variations in institutions in this analysis.

3 Health care financing and resources

In this section I summarize those features of the health systems in the analyzed countries which are relevant for my empirical analysis. As the data used in the empirical analysis stem from years 2006-2007, the description below corresponds to these years as much as possible.

Table 1 includes a set of aggregate statistics about health care resources and expenditures, in addition to the indicators of cost-sharing and the gatekeeper role of GPs.[1] The cross-country differences in the relative number of health care professionals and in the relative public and private expenditures are not negligible.

The out-of-pocket (OOP) costs of outpatient services cannot be described with a single measure. One indicator is the ratio of private household out-of-pocket expenditures within the total health expenditures. However, this indicator refers to all types of health expenditures, including the costs of hospital care and

[1] The source of the WHO data is the European health for all database.
The WHO definition of physician is a person who has completed studies in medicine at the university level. It excludes among others physicians not practising, and dentists. The number of specialist includes the number of physicians specialized in dermatology, gynecology, ophthalmology, otorhinolaryngology, paediatrics, radiology, and urology.

medicines. Therefore additional information would be needed to estimate the effect of OOP costs of outpatient services on utilization.

The generosity of the mandatory health insurance can also influence outpatient care utilization. More generous public health system can imply not only lower OOP payments, but also less need for voluntary health insurance. Higher public health expenditures relative to the GDP and to the population can indicate better availability and higher quality of health services, which can induce demand for medical care.

Table 1 here

The utilization of health services can also be influenced by the copayment requirements. In some of the countries the patients have to pay for outpatient visits. Two main rationales for cost-sharing arrangements are to reduce the burden on the public budget, and to avoid the problem of over-utilization. I summarize below the cost-sharing policies for GP and specialist care in the analyzed countries. The summary is based on [6] and [11]. The additional sources of information are indicated by country.

Apart from the health care resources, expenditures, and copayments for outpatient services, the legal status of medical doctors also differ across the countries. As a key part of the empirical analysis I analyze the utilization of outpatient services provided outside the frameworks of the public health care. This utilization can be influenced by the institutional settings, mainly as to what extent are substitutive or supplementary providers and services available. Therefore I include brief descriptions on the country specific delivery of outpatient services in the following summary (focusing on years 2006-2007).

Austria From 2006, 10 EUR/year service fee applies for the so-called e-card which replaces the previous quarterly fee. Exemptions apply to children, pensioners receiving minimum pension, and to those with specified health problems. There is a mixture of private and public provision of outpatient services. Physicians contracted with a health insurance fund have gatekeeper role. ([12])

Belgium The rate of copayments is 25% (10%) for GPs, and 40% (15%) for specialists. The values in brackets apply for patients in socioeconomically vulnerable groups, among others pensioners and disabled with income below a specified limit. GPs mainly work in private practices, whereas specialists can either work in a private practice or at an outpatient department of a hospital. GPs have no gatekeeper function, the patients can directly access the specialists. ([13])

Czech Republic User fees for doctoral visits were introduced only in 2008, before that the inpatient and outpatient health services were free of charge. About 95% of the primary health services were privatized in 2002. The vast majority of outpatient specialists have also become private in the past few years. There is no gatekeeping function of GPs, but referral from a GP to specialists is still recommended, and indeed common practice. ([14], [15])

Denmark There are no copayments for GP care and for most of the specialist services for Group 1 citizens (including 99% of the population), but specialist care is free only after a referral from a GP. Therefore GPs act as gatekeepers for Group 1 citizens. People choose between coverage options "Group 1" - the default, and "Group 2" - which provides free choice of physicians without referral from GP, but the costs are covered only up to the corresponding costs of patients in Group 1. GPs and specialists are private, self-employed practitioners. ([16])

France The rate of copayments is 30%: people pay 100% up-front, but health insurance funds reimburse 70% of doctoral visit costs. In general there are no upper limit on the services reimbursed. Patients with specified long-term illnesses are exempt from the copayments. Outpatient care is provided by self-employed doctors. GPs have no gatekeeper role, but can voluntarily become so-called referring doctors, which is similar to gatekeeping. In 2004 around 10% of GPs accepted this gatekeeping system. ([17])

Germany There is 10 EUR fee for the first contact per quarter at a physician's office, and 5-10 EUR fee apply for services in ambulatory care. Exemptions apply to individuals suffering from chronic health problems. Outpatient care is mainly provided by private for-profit providers. The patients can contact the specialists directly but there are initiatives for the gatekeeping system, e.g. since 2004 the sickness funds provide bonus for complying with the gatekeeping rules. ([18])

Greece There are no copayments for outpatient GP and specialist care, but informal payments are prevalent. Due to structural problems, the utilization of private care is widespread, which requires out-of-pocket payments. Outpatient services are provided by public or private practitioners. GPs have no gatekeeper or referral role in Greece. ([19])

Italy There are no copayments for GP consultations, but there is some evidence for informal payments. The fee of specialist care varies by regions, the maximum amount is 36 EUR per visit. People with chronic diseases, with disabilities, aged above 65 with income below a minimum are exempt from the copayments. GPs contract with the government and act as gatekeepers, however some specialist services (e.g. gynecology and optometric services) can be accessed directly. Because of the low quality and long waiting times in the public sector, there is high demand for private specialist care. ([20])

Netherlands There are no cost-sharing arrangements for GP and outpatient specialist care. GPs are registered at the government and have private practices. Outpatient specialist services are mainly provided by the outpatient facilities of the hospitals. The specialists are self-employed and contract with the hospitals. GPs act as gatekeepers, and the majority of medical problems are treated by them, which indicates that the gatekeeping system is efficient. ([21])

Poland There are no copayments for consultations with GPs and specialists in the public sector. There is evidence that informal payments to physicians are prevalent, but the share of primary health care in the informal payments is very small. GPs have an increasing role in the Polish health system. With some exceptions, specialist services are available only with a referral from the GP. Outpatient specialist care is provided either by private practitioners or by independent health care institutions. ([22])

Spain No cost-sharing arrangements apply for GP and outpatient specialist care in the public sector. Informal payments are practically not present in the Spanish health care. Primary care provision is basically publicly owned and staffed. GPs act as gatekeepers, and may refer patients to specialized services if necessary. For some service types referral is not needed. There is a mixture of private and public ownership in inpatient and outpatient specialist care provision. ([23])

Sweden Fees apply for consultations with GPs (ca. 15 EUR) and specialists (ca. 30 EUR), with a maximum of around 100 EUR per year. The fees vary by counties, but the maximum amount is set centrally.

GP and specialist services are mainly publicly provided, but there are also private providers. It varies across the counties if GPs have gatekeeping role. ([24])

Switzerland 10% cost-sharing applies for GP and outpatient specialist services, but there is an upper limit on the copayments. In addition, people have to pay a part of the costs in the form of a deductible. This is set annually up to around 1,100 EUR, varying by insurance companies. Most of the outpatient health services are provided by independent practitioners. Patients have free choice of doctors, and have direct access to ambulatory specialist care. ([25])

Due to the international differences in the cost-sharing policies (fixed fees, proportional fees, and the mixture of these), it is not possible in the empirical analysis to control directly for the magnitude of copayments required for outpatient services. On the other hand, it is possible to differentiate the countries according to copayments are required or not. The categorization is still not trivial, since the cost-sharing regulations might vary across the population groups. I set the cost-sharing binary indicator to one in countries where official cost-sharing applies to the majority of the population. According to this differentiation, cost-sharing applies to Austria, Belgium, France, Germany, Sweden, and Switzerland in case of GP care. The list is extended with Italy in case of specialist care. The countries can also be differentiated on the basis if GPs have a gatekeeper role, that is if a consultation with a GP is required for contacting a specialist. GPs are gatekeepers in Austria, Denmark, Italy, the Netherlands, Poland, and Spain. Based on the summary provided above, outpatient services are provided to a large extent by private practitioners in the analyzed countries. Therefore the question of interest in the empirical analysis is not the demand for private care per se, but for such services which are out of the public health care system.

4 Data

The empirical analysis is based on the second wave of the Survey of Health, Ageing, and Retirement in Europe (SHARE), release 2.3.1.[2] The SHARE is a panel data set, it covers individuals aged 50 or above, and their spouses.

I analyze the utilization of health care services based on the second wave of SHARE because it has wider country coverage than the first wave. Identification by exogenous time-variation in health care systems is not possible because there are generally only small changes in the health institutions between waves one and two. The second wave of SHARE covers 14 countries, but since the imputations are not available for Ireland, I include 13 countries in my analysis: Austria, Belgium, the Czech Republic, Denmark, France, Germany, Greece, Italy, the Netherlands, Poland, Spain, Sweden, and Switzerland. The total size of the sample used is 30.8 thousand.

Applying individual data makes it possible to control for a wide range of individual and household specific characteristics which can influence health care utilization. The SHARE contains multiple imputations for income and wealth measures, and I use the average of these. I report some descriptive statistics of the variables in Table 2. The income and wealth measures are generated by dividing the household level measures

[2]This paper uses data from SHARE release 2.3.1, as of July 29th 2010. SHARE data collection in 2004-2007 was primarily funded by the European Commission through its 5th and 6th framework programmes (project numbers QLK6-CT-2001- 00360; RII-CT- 2006-062193; CIT5-CT-2005-028857). Additional funding by the US National Institute on Aging (grant numbers U01 AG09740-13S2; P01 AG005842; P01 AG08291; P30 AG12815; Y1-AG-4553-01; OGHA 04-064; R21 AG025169) as well as by various national sources is gratefully acknowledged (see http://www.share-project.org for a full list of funding institutions).

with the household size, and the values are purchasing power parity adjusted. As health indicators I use the number of reported chronic diseases the respondents ever had, ADL limitations, and reported symptoms.[3]

Table 2 here

The outcome variables refer to outpatient care utilization in the last 12 months before the interview. These are the reported visits to GPs and specialists. In addition, I analyze the utilization of services provided by private providers. Private care utilization is defined the following way in the generic SHARE questionnaire: receiving any of the specified types of care from private providers that the respondent paid himself or through a private insurance because he would have waited too long, or could not get them as much as needed, in the National Health System. Thus, if for example GPs are private practitioners in a country, but visits to GPs are covered by the social security system then utilization of GP care is not defined as private care utilization.

The utilization measures cannot perfectly capture the demand for care, as there might be individuals who demand a service but cannot access it. The SHARE wave 1 data provide some information on forgone care, and only 0.4% of the respondents report forgoing GP care due to unavailability. For specialist care this ratio is 0.9%.

Table 3 here

The percentage of respondents reporting outpatient care utilization in each country is presented in the first part of Table 3. Some of the cross-country differences can be due to differences in the characteristics of the respondents, therefore in the second part of the table I present the predicted utilization for a representative individual. I return to these predictions in section 5.3.

The binary indicator of public care utilization equals one if the respondent reports some health care utilization, but no private care utilization. The utilization of specialist care varies more across the countries than the utilization of GP services.

The binary indicator of private care utilization equals one if the respondent reports private care utilization. Due to data limitations it cannot be identified if a respondent utilizes private care only or both private and public care. Private care utilization is less prevalent for GP care than for specialist care. The highest ratio of patients report private specialist care utilization in the Mediterranean countries, Poland, and Switzerland. In these countries specialist health services are available only to a limited extent within the framework of the public health system. These SHARE statistics are in line with the WHO statistics presented in Table 1, in the sense that the private care utilization statistics are positively correlated with the relative amount of private health care expenditures. In Table 2 I also present the descriptive statistics for the subsample of those individuals who report the utilization of private GP or specialist care. The only strong difference is that those who utilize private care report on average worse health status.

[3] The chronic health conditions included in the survey are: heart attack, high blood pressure, high blood cholesterol, stroke, diabetes, chronic lung disease, asthma, arthritis, osteoporosis, cancer, stomach ulcer, Parkinson disease, cataracts, hip or fremoral fracture, Alzheimer's disease, and benign tumor.

The ADL limitations include difficulties with dressing, walking across a room, eating, bathing, getting in or out of bed, and using the toilet.

The specified symptoms are: pain in a joint, heart trouble, breathlessness, persistent cough, swollen legs, sleeping problems, falling down, fear of falling down, dizziness, stomach problems, incontinence, and fatigue.

5 Regression analysis

5.1 Benchmark models

I apply regression estimations so as to quantify the relationship between outpatient care utilization and the indicators of health care institutions. Following the seminal paper of [26], I assume that health care utilization is based on the utility maximizing behavior of the individuals. This assumption makes it reasonable to include a rich set of regressors in the empirical model that can indicate individual specific health and "health production" characteristics. In the preferred estimations I control for a set of institutional characteristics at the same time. I differentiate the utilization of public and private care.

Due to potential reverse causality from health care demand to health care institutions, my estimation results cannot be interpreted as causal effects of institutions on utilization. Still, the following analysis can reveal some underlying mechanisms how the institutional settings influence the health care utilization. Easier access, higher quality and lower out-of-pocket costs of public health services can increase the demand for and utilization of public care. As for private health services, the disutility attached to health services can be lower due to the shorter waiting times or higher quality of services. Private care can be a suitable option also if the access to public (specialist) care is restricted by gatekeeping. On the other hand, private care is typically more costly for the patients than public care.

I estimate linear probability models of public and private care utilization. Since the regressors are the same in the models of the two types of utilization, the seemingly unrelated regression estimates of public and private care utilization are equivalent to the equation-by-equation OLS estimates.[4] The estimated standard errors of the coefficients allow for clustering on the country level. Clustering is needed since I use country level aggregate explanatory variables (following [27]), and also there might be some unobservables which are country specific, thus correlated within countries. Using clustered standard errors has considerable effect on the statistical significance of the country specific coefficients.

The linear probability models have the following form:

$$\begin{aligned} \Pr\left(Y_{i1}=1\right) &= X_i\gamma_1 + Z_i\delta_1 + v_{i1}, \\ \Pr\left(Y_{i2}=1\right) &= X_i\gamma_2 + Z_i\delta_2 + v_{i2}, \end{aligned} \tag{1}$$

where Y_1 refers to public care utilization, and Y_2 to private care utilization, and index i is the individual index. The X vector of regressors includes the following variables apart from a constant term: variables indicating the individual budget constraint (logarithm of income, housing wealth, and financial wealth), indicators of individual preferences and health behaviors (age, gender, marital status, education level, current employment status, being self employed ever, living area, and smoking dummies), and health indicators (number of reported chronic health problems, ADL difficulties, symptoms). The Z vector includes the following country specific regressors: the number of providers in the given service type, binary indicators of copayments required for GP and specialist care, and a binary indicator of the gatekeeper role of GPs. I do not include a measure of public health expenditures in these models since such a regressor would clearly be subject to reverse causality. The more public health care the people utilize, the higher the public expenditures are.

[4] A weakness of the OLS specification is that it is based on linear probability models of utilization, which can predict probabilities outside the $0-1$ interval. However, the results are robust to estimating the models with logit estimation or with multinomial logit, where the three choice alternatives are no utilization at all, public care, and private care utilization. The multinomial logit estimation results (marginal effects) are close to the OLS ones.

I present in Table 4 the estimated coefficients of the country specific regressors.[5] The copayment and gatekeeper indicators are binary variables, hence the coefficients can be interpreted as the difference in the probability of utilization with and without copayment arrangements or gatekeeper function of GPs. For the sake of comparison, in the first part of Table 4 I also report the estimated coefficients of interest if only one of the country specific regressors is included at a time, apart from the individual specific controls.

Table 4 here

The estimated coefficients of copayments, gatekeeper role, and the number of providers are qualitatively robust to the inclusion of the country specific regressors one by one or jointly. The only exception here is the coefficient of the indicator of GP copayments, which has reverse sign under the two specification. In addition, the estimated association between public specialist care utilization, and copayments and gatekeeper role are significantly different from zero only under the first set of estimates. Such differences are reasonable since in the preferred regression analysis I control for the different institutional characteristics at the same time, therefore I can estimate the ceteris paribus effect of the included indicators. If the institutional characteristics are included one by one in the utilization model then one estimated coefficient can capture the effect of several institutional characteristics.

The estimation results indicate a non negligible but statistically insignificant negative association between copayments and the probability of public GP care utilization. In countries where copayments are required the probability of public GP care utilization is around 6 percentage points lower, holding the other factors fixed. At the same time the probability of private GP care utilization is about 1 percentage point higher. As for specialist care, the estimation results indicate that the probability both of public and private specialist care utilization is considerably higher if there are copayments. The relatively strong positive relationship with public specialist care utilization can be explained either by supply side effects (demand generated by the health care providers), or by the higher quality of care if there are copayments.

If GPs have gatekeeper role in a country then the utilization of public outpatient specialist care is less likely by more than 8 percentage points, whereas that of private specialist care is more likely by 4 percentage points. The results indicate that the probability of GP care utilization is not in an economically or statistically significant relation with the gatekeeper role of GPs. The results also show that the higher relative number of health care providers is associated with higher probability of public care utilization. The higher number of providers can indicate better availability of services, and at the same time can be the consequence of higher demand for health care services. The significant coefficient in case of GP care can capture the cross country differences in the role GPs have in the health care systems.

The estimation results can be compared to the related findings in the literature. [8] find based on the ECHP data that the number of physicians increases the visits to GPs but not to specialists - according to my estimates this effect is positive or zero for both service types. They also estimate that the gatekeeper role of GPs increases the utilization of GP services but decreases that of specialist services. However, my results indicate negative effect on both care types, although very weak and insignificant on GP care. [8] also analyze how the payment of doctors affects health care utilization, and find that fee-for-service payments increase specialist care utilization. This is in line with my result on the positive association between specialist care utilization and copayments. Based on the ECHP data, [6] also find that the gatekeeper role of GPs decreases the utilization of specialist care, but increases the visits to GPs.

[5] The estimated coefficients of the individual specific regressors are available from the author upon request.

[7] estimate models of physician utilization based on the first wave of SHARE data. The sign of the effect of gatekeeping on GP visits, and of copayments on specialist visits estimated by [7] are different from my estimates. There are several potential reasons for these differences: my estimates are based on a wider range of countries, I do not analyze the number of visits, the additional control variables differ, and also the gatekeeper and copayment arrangements are defined differently - I generated these indicators based on the "Health systems in transition" series of the WHO. On the other hand, it is a similar result that specialist care utilization is more responsive to the institutional factors, especially to the copayment and gatekeeping indicators, than the visits to GPs.

According to my knowledge, there are no directly comparable empirical studies which analyze and internationally compare the utilization of private health care services. [10] analyzes the demand for private care in the U.K., and finds that better socioeconomic status is generally associated with higher demand for private care services. Based on my estimations, a clear result is that higher number of reported chronic health conditions and symptoms increases the use of private health care.

5.2 Heterogeneity analysis

To get further insights into how the outpatient care utilization differs along the institutional characteristics, I reestimate the linear models of utilization, allowing for heterogeneity with income and health status. This analysis can reveal whether those in worse financial status or worse health condition are more sensitive to the health care financing and gatekeeping arrangements. I interact the indicators of copayments and gatekeeping first with the binary indicators of receiving high or low income, then with reporting at least one chronic health condition. The binary indicators of high and low income equal one if the reported amount of income is above the country specific third quartile or below the first quartile, respectively. The third quartile has the highest value in Switzerland and the lowest in Poland, whereas the first quartile is the highest in Sweden, but again the lowest in Poland. As for the indicator of chronic health conditions, around 25% of the respondents report at least one chronic illness. The estimated coefficients of interest are presented in Table 5.[6]

Table 5 here

There is some evidence for heterogeneous relation between the analyzed indicators of the health care systems and the utilization of outpatient care. As for GP care utilization, the only significant result for heterogeneity across income groups is that those with low income are less likely to visit a GP if GPs have gatekeeper role. Copayments and the gatekeeping role of GPs are associated with lower likelihood of GP visits only if someone is in a good health condition. These negative associations are not present any more for those who report chronic health problems. Copayments can reduce the over-utilization of GP care, but might also decrease the utilization of preventive services among the healthy ones. The heterogeneity with respect to health can be partly due to the fact that in many countries those with chronic health condition are exempt from the copayments (see section 3 for some details).

The surprising positive association between public specialist care utilization and copayments is driven by those who have relatively high income and who report chronic health problems. The interaction term of copayments with low income is on the other hand negative. Again, the result that those with chronic health conditions are more likely to visit a specialist if there are copayments can be caused by exemptions from the

[6] The estimated coefficients of the individual specific regressors are available from the author upon request.

copayments, but no evidence is found that similar exemptions would drive up the utilization among the low income individuals. The results also indicate that the better-off individuals are also more likely to utilize private specialist care if GPs have gatekeeper role, whereas those with low income are less likely to do so. Thus the gatekeeper role of GPs seems to direct some of the better-off individuals towards private specialist care, which might reduce the burden on the public health care system. A potential explanation can be that people with higher income are more likely to have voluntary private health insurance and that is why they use more private care. The second wave SHARE data do not provide information on the private health insurance coverage. Based on the first wave data [28] provides evidence that the probability of voluntary private health insurance coverage indeed increases with income, and the voluntary insurance increases the overall utilization of specialist care, although this effect is insignificant.

In sum, the estimation results indicate that in the analyzed population if someone does not have any chronic health condition then the copayments required for GP services decrease the likelihood of visiting a public GP by 13 percentage points, and the gatekeeping role decreases it by 11 percentage points. The estimated probability of visiting a private specialist is on average 4 percentage points higher if GPs act as gatekeepers, and 3 percentage points higher if there are copayments for specialist care. These effects are driven by people in the top income quartile. Although these estimated associations are small in absolute level, but comparing to the sample average of 3% utilizing private specialist care the relative magnitudes are large.

5.3 Country specific analysis

In order to unveil which countries drive the above presented estimation results, I reestimate the utilization models with including country dummies and omitting the country specific regressors. I then predict the probabilities of outpatient care use for a representative individual who has the median value of the continuous regressors and the mode of the categorical regressors. These results are presented in the second part of Table 3.

The predicted utilization probabilities are close to the observed utilization rates, showing that the observed cross country differences are mainly due to different institutional settings and not to differences in the characteristics of the respondents among the countries.

There are some clear relationships between the country specific predicted probabilities of use and the institutional characteristics, in line with the regression results of section 5.1. The binary indicator of copayments for specialist care is associated with higher predicted probability of public specialist care use (correlation: 0.49). The gatekeeper role of GPs implies lower probability of public specialist care use (correlation: -0.44) but higher probability of private specialist care use (correlation: 0.23). Finally, higher public health expenditures are associated with higher likelihood of public care utilization. This association is negative with respect to private outpatient care utilization. The correlation of expenditures per GDP with the predicted utilization probability is similar for public GP care (0.49) and public specialist care (0.45). These positive associations cannot reveal causal relations as higher demand for public care might cause the higher expenditures. The country specific predicted probability of utilizing private care is on the other hand negatively related to the relative magnitude of public health expenditures. This can be the consequence of more generous public health care inducing the utilization of public care rather than private care, but the utilization of private care also decreases the magnitude of public health expenditures. The negative correlation is smaller for private GP care (-0.28) than for private specialist care (-0.49).

6 Conclusions

There are considerable differences in public and private outpatient health care utilization among the European countries. The aim of this paper is to analyze how the out-of-pocket costs of outpatient health services and the gatekeeper role of general practitioners are related to public and private outpatient care utilization of people aged 50 and above. This analysis is possible based on cross-national observations from Europe, using the institutional variations across the countries. The individual observations make it possible to filter out the influencing role of socioeconomic characteristics and health status.

After providing an overview of the health care institutions, I analyze separately the utilization of general practitioner and outpatient specialist services. I estimate regression models of public and private care utilization, where in the preferred specification I control for the selected indicators of health care institutions at the same time.

Based on the estimation results, the probability of visiting a GP is lower if copayments are required, but only among those who do not report any chronic health conditions. Surprisingly, visiting both public and private specialist is more likely if there are copayments for the public visits, but these positive associations are present only for the better-off individuals. The utilization of public outpatient care is lower if GPs have gatekeeper role, and at the same time the utilization of private specialist care is higher among those who have relatively high income.

These results indicate that if the aim is to avoid over-utilization of outpatient public health care then decreasing the generosity of public financing might be effective in demand reduction. However, such policy changes can also decrease the utilization of important preventive services, which can eventually lead to worsening health condition. The empirical results also suggest that if the out-of-pocket costs of public health care are increased or if general practitioners have gatekeeper role then individuals partly substitute the public health services with private ones.

I conclude with some cautionary notes. The findings of the paper are based on a sample of individuals aged 50 and above, from thirteen countries, all of which are developed European countries. Therefore the estimates might not be valid for the whole population or for countries with much different health care systems. Moreover, only a limited number of institutional characteristics can be controlled for because of the limited number of countries in the sample. Reverse causality is also an important concern, as the institutional settings might be altered based on the demand for health care services. Thus endogeneity concerns remain in the regression analysis and I cannot claim causality. Finally, the identification is based on cross-country variation and not on the analysis of health care reforms, hence the policy implications of the results have to be treated carefully.

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	Number of suppliers per 100 thousand inhabitants			Public health expenditures	Public health expenditures	Private OOP expenditures	Cost-sharing		GP
	Physicians	GPs	Specialists	per GDP (%)	(PPP$) per capita	per total (%)	GP	Specialist	gatekeeper
AT	444.2	150.8	54.0	7.8	2737	15.9	+	+	+
BE	402.2	170.9	57.4	7.2	2406	18.9	+	+	0
CZ	356.5	70.3	73.4	6.1	1332	11.3	0	0	0
DK	340.1	68.9	23.9	8.1	2823	14.3	0	0	+
FR	345.3	168.9	43.2	8.7	2790	6.8	+	+	0
DE	345.0	66.4	51.3	8.1	2660	13.3	+	+	0
GR	534.6	24.9	80.6	5.9	1580	36.0	0	0	0
IT	365.4	78.9	.	6.9	2054	20.0	0	+	+
NL	360.5	52.0	23.6	7.4	2731	6.2	0	0	+
PL	218.0	15.2	37.8	4.3	643	25.6	0	0	+
ES	362.9	72.6	.	6.0	1757	21.5	0	0	+
SE	357.9	60.4	43.0	7.4	2548	16.2	+	+	0
CH	388.6	52.4	.	6.4	2463	30.8	+	+	0
	WHO	WHO	Eurostat	WHO	WHO	WHO			
	2006	2006	2005	2006	2006	2006			
	(CH:2008)	(CZ: 2008)							

Table 1: Health care resources and expenditures in the analyzed countries

	Whole sample		Private care utilized	
	mean	std.dev.	mean	std.dev.
age	64.78	10.02	65.15	9.95
female	0.55	0.50	0.60	0.49
marital status: with spouse	0.71	0.46	0.71	0.45
marital status: with partner	0.04	0.19	0.03	0.18
marital status: single	0.26	0.44	0.26	0.44
income (1000 EUR)	19.31	116.82	20.88	138.94
main residence (1000 EUR)	90.28	207.67	93.24	160.95
financial wealth (1000 EUR)	30.15	87.88	28.32	79.50
education: primary	0.32	0.46	0.39	0.49
education: lower secondary	0.18	0.38	0.12	0.33
education: upper secondary	0.32	0.47	0.32	0.47
education: tertiary	0.18	0.38	0.16	0.37
area: big city	0.15	0.36	0.18	0.39
area: suburbs big city	0.15	0.35	0.12	0.32
area: large town	0.19	0.39	0.19	0.39
area: small town	0.22	0.42	0.19	0.39
area: rural	0.29	0.45	0.32	0.47
employment: retired	0.53	0.50	0.55	0.50
employment: employed	0.27	0.45	0.23	0.42
employment: unemployed	0.03	0.16	0.01	0.12
employment: disabled	0.04	0.19	0.06	0.24
employment: homemaker	0.13	0.33	0.14	0.35
self employed ever	0.10	0.30	0.15	0.36
smoking: never	0.23	0.42	0.26	0.44
smoking: stopped	0.58	0.49	0.57	0.50
smoking: yes	0.20	0.40	0.17	0.38
# illnesses	1.64	1.52	2.25	1.79
# ADL problems	0.23	0.84	0.35	1.02
# symptoms	1.80	1.91	2.53	2.27
GP visit (binary)	0.80	0.40	0.88	0.32
specialist visit (binary)	0.43	0.49	0.78	0.41
Observations	30,818		1,395	

Table 2: Descriptive statistics

	Observed utilization				Predicted utilization at the median			
	Public care		Private care		Public care		Private care	
	GP	Specialist	GP	Specialist	GP	Specialist	GP	Specialist
AT	82.4%	51.2%	1.0%	2.7%	83.2%	48.0%	0.6%	2.0%
BE	88.6%	53.0%	1.0%	0.6%	88.8%	47.4%	0.6%	-0.3%
CZ	84.8%	50.8%	0.2%	0.8%	84.5%	48.3%	-0.4%	0.4%
DK	77.1%	22.2%	2.6%	0.6%	78.7%	16.8%	2.1%	-0.8%
FR	87.5%	51.2%	2.1%	1.4%	89.5%	48.1%	1.7%	0.7%
DE	84.1%	55.8%	0.3%	0.2%	86.0%	52.1%	-0.1%	-0.9%
GR	64.8%	29.0%	3.2%	7.2%	67.1%	30.4%	3.1%	7.8%
IT	83.8%	36.8%	0.4%	12.2%	82.7%	34.3%	0.1%	12.2%
NL	72.3%	39.5%	0.8%	0.6%	75.5%	35.8%	0.7%	0.1%
PL	72.7%	23.0%	3.7%	5.7%	71.8%	19.3%	3.1%	5.2%
ES	81.2%	34.7%	0.8%	2.9%	80.9%	33.0%	0.5%	3.0%
SE	66.4%	34.6%	1.3%	1.5%	67.1%	29.8%	0.7%	0.6%
CH	65.8%	29.9%	8.8%	5.6%	69.3%	30.7%	8.7%	5.0%

Table 3: Outpatient care utilization by countries

One control at a time	GP		Specialist	
	public	private	public	private
GP copayment	0.038	0.003		
	[0.91]	[0.36]		
specialist copayment			0.108*	0.011
			[1.98]	[0.56]
GP gatekeeper	-0.008	-0.004	-0.115**	0.018
	[0.21]	[0.47]	[2.34]	[0.85]
# providers per 1000	0.127***	-0.012	0.037	0.012
	[7.10]	[1.59]	[0.94]	[1.38]

Controls included jointly	GP		Specialist	
	public	private	public	private
GP copayment	-0.055	0.014		
	[1.14]	[0.81]		
specialist copayment			0.074	0.026
			[1.52]	[1.15]
GP gatekeeper	-0.004	0.000	-0.084	0.040
	[0.14]	[0.05]	[1.59]	[1.55]
# providers per 1000	0.156***	-0.020	0.009	0.023
	[4.37]	[1.33]	[0.28]	[1.57]

* significant at 10%; ** significant at 5%; *** significant at 1%
based on clustered standard errors, t statistics in brackets

Table 4: Estimated coefficients based on the OLS models of utilization (coefficients of individual specific characteristics not reported)

	Interactions with income indicators				Interactions with health indicator			
	GP		Specialist		GP		Specialist	
	public	private	public	private	public	private	public	private
GP copayment	-0.048	0.016			-0.131**	0.009		
	[0.99]	[0.84]			[2.46]	[0.58]		
specialist copeyment			0.073	0.027			0.028	0.026
			[1.48]	[1.26]			[0.66]	[1.38]
gatekeeper	0.002	-0.001	-0.086	0.037	-0.112***	-0.004	-0.121**	0.031
	[0.07]	[0.09]	[1.62]	[1.55]	[3.61]	[0.62]	[2.51]	[1.52]
high income·GP copay	-0.006	-0.004						
	[1.2]	[1.11]						
low income·GP copay	-0.013	-0.002						
	[1.39]	[0.53]						
illness·GP copay					0.101***	0.008		
					[4.17]	[1.56]		
high income·specialist copay			0.029**	0.013**				
			[2.80]	[2.50]				
low income·specialist copay			-0.025*	-0.013*				
			[2.03]	[2.12]				
illness·specialist copay							0.060***	-0.001
							[3.11]	[0.19]
high income·gatekeeper	0.000	0.003	-0.009	0.024***				
	[0.01]	[0.85]	[0.58]	[3.06]				
low income·gatekeeper	-0.020**	-0.001	0.018	-0.018***				
	[2.28]	[0.43]	[1.20]	[3.28]				
illness·gatekeeper					0.144***	0.005	0.049	0.012
					[6.44]	[1.56]	[1.50]	[1.10]
# GP per 1000	0.156***	-0.020			0.155***	-0.020		
	[4.39]	[1.33]			[4.35]	[1.33]		
# physicians per 1000			0.010	0.023			0.009	0.023
			[0.30]	[1.69]			[0.27]	[1.58]

* significant at 10%; ** significant at 5%; *** significant at 1% based on clustered standard errors,
t statistics in brackets

Table 5: Estimated coefficients in the extended OLS models of utilization (coefficients of individual specific characteristics not reported)